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Geography in relation to war

Sir Edward Sinclair May

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GEOGRAPHY IN RELATION TO WAR

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GEOGRAPHY IN RELATION TO WAR

BY

COLONEL E. S. MAY, C.B., C.M.G.

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PREFACE

THE following pages represent two lectures on Military Geography delivered at the conference of officers of the General Staff at the Staff College, and to the members of the Royal Artillery Institution respectively, at the beginning of this year. They are republished in their original form at the suggestion of some who were kind enough to think that they might be of use to officers other than those whom I had the honour to address.

EDW. S. MAY.

December, 1906.

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GEOGRAPHY IN RELATION TO WAR

PHYSICAL geography forms the basis of geography in general. In itself we have been accustomed to regard it as a dry science, perhaps because of the manner in which it was presented to us when we were young. In our schooldays the majority of us learnt by rote the definition of an isthmus, an island, a peninsula, and so on, the names of the principal rivers in the various countries and the heights of their loftiest hills, added, perhaps, to a list of their products and manufactures. We learnt facts, but not their application to real life. Therefore we soon wearied of them, and forgot them as quickly as we could.

THE INFLUENCE OF GEOGRAPHY

Of late, however, owing largely to the exertions of the various geographical societies, and more especially to those of the Royal Geographical Society, the influences of geography, direct and indirect, on mankind and on the doings of mankind, have aroused growing interest; and now everybody recognises that all, or almost all, sciences are in some way or other under obligations to or connected with geography. Thus history, botany, zoology, and the art of war, have all become closely

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associated with it. But all these ramifications of the influence of geography spring from that science which treats of the condition of the earth's surface as it now exists, including the distribution over it of mankind, of animals, of various products, of the natural phenomena of its different regions, and of how they have been conditioned by artificial influences.

My object here is to point out the general nature, object, and importance of military geography, and to show how closely this subject should be studied by officers, and how intimately connected it is with strategical and tactical operations. Military geography regards the geographical features of the earth with a view to military operations; but since wherever man exists he has modified the original condition of the ground, wherever armies meet topography has to be considered as well as geography, and often the artificial details of a country are as important as those of natural origin.

Further, in an empire such as ours, strategy and warlike operations on a large scale must almost always embrace considerations affecting the operations of both Army and Navy; and therefore, when we study military geography, we have to devote considerable attention to the sea, that portion of the globe which many writers on the subject barely mention.

IMPORTANCE OF A STUDY OF GEOGRAPHY FOR OUR OFFICERS

Tactically considered, of course, the sea has less interest for us in a geographical sense than the land. The sea has been said to be all one. It is certainly so in its strategical aspect, which implies

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that no limit and no narrow confines can be set to sea-power, but tactically it is all one in a more restricted sense, in so far that the combatants who meet upon it fight upon a level arena the same in every respect for both, and where no advantage is to be gained by a clever use of the features of the theatre of combat. In selecting a commander for a certain enterprise, it is no little recommendation that he should know the country. It is no small advantage to a general that he can utilise the peculiarities of the terrain to hamper an opponent strange to the region; but no admiral would be selected because he knew a particular water, for the simple reason that fleets never engage but with ample room beneath their keels, and that it is no part of naval tactics to utilise shoals or rocks to the discomfiture of an opponent—coast defence, of course, being left out of sight for the moment.

It may be thought that it is hardly necessary for me to dwell long on the necessity for officers studying military geography as I have defined it, especially officers of our Army, whose duty calls them to so many different portions of the globe.

To say that the nature of the country must influence operations is to assert what all will recognise as a mere truism. It will enhance your interest in the subject, however, if I recall to your mind categorically the principal directions in which such influence will make itself felt.

ESTABLISHMENT OF BASES

In the first place, let us consider the establishment of a base of operations. In the case of

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oversea expeditions this will mean a seaport. To rapidly seize a seaport implies surprise. We must usually try and snatch it by a *coup de main*, because such havens are usually fortified, and if war be imminent we may assume that their defenders will be on the alert. We may very often, or even usually, therefore, have to throw a force ashore on an open beach, and by a rapid raid from such a temporary base gain possession of a better one by attacking a harbour on the land side.

The depth of water, the set of the tides, the existence or otherwise of a position from which the disembarkation may be covered, the avenues of approach inland, the water-supply and facilities for camping—all these considerations have on such an occasion to be closely examined, and they, one and all, are connected with military geography. For an oversea expedition, then, at the very outset, a knowledge of the military geography of the country to be assailed is essential.

But in many parts of the world our frontiers are coterminous with those of potential enemies. We may in such regions wish to establish a land base, and in that case we shall find that a knowledge of military geography will again be of immense assistance. The security of the base from any enterprise on the part of the enemy, the existence of routes from it by which provisions and stores may be conveyed to, and distributed along the line of communications of the fighting force, the best positions for the establishment of posts for securing those communications, for dépôts, for hospitals, and for all the other necessities of an army, have to be

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thought of. Rivers and canals, hills, roads, railways, firewood, must all be kept in view, and every one of these is included within the sphere of military geography.

COMPOSITION OF ARMIES, AND ESTABLISHMENT OF LINES OF COMMUNICATION

A knowledge of the nature of the country where operations are to take place will teach us how our army must be composed; whether it is to be strong in mounted infantry, whether cavalry are likely to find an opportunity for their special characteristics, whether artillery can turn its long range to account, whether pack or wheeled transport will be necessary—all these questions are governed by a knowledge of the military geography of the country, and the general who leaves them out of sight will fare badly. If his knowledge of the country will enable him to look beyond his base and immediate advance, he will be able to perceive where the directions of columns may be changed, where, in all probability, they may most suitably unite, where a change of base and communications may be established or how the original channels of communication may be improved.

RESOURCES OF THE COUNTRY OPERATED IN

Further, not only the nature but the resources of the theatre of war will have to be studied. Is it fertile, or otherwise? What districts will supply most food and forage? Where can cattle and horses be found? Is the climate such as will render the provision of tents necessary? Is the

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winter so severe that roads may be blocked by snow, or lakes and rivers rendered passable by ice? Above all, is there a rainy season which may destroy or impair roads and create mud?—mud which Napoleon, remembering Poland, designated "the fifth element in war" ("J'ai trouvé en Pologne un cinquième élément: c'est la boue").

It is with resources most of all perhaps that a general is concerned In the days of comparatively small armies the resources of the country were of immense importance, because they could contribute very largely to the support of the troops. Supplies nowadays, when enormous armies engage, and when, owing to the higher standard of civilisation, more ammunition, more medical comforts, more food have to be carried, become the dominating factor in warfare. It is popularly supposed that the art of war consists in destroying life; it would be more correct to describe it as the art of sustaining existence. If we want to kill our enemies we must enable our men to live, and it is the inability to find food that has frequently caused the overthrow of the most powerful armies. In 1674, when Sobieski, with five to one against him, freed his country from the Turkish menace, it was hunger imposed upon the enemy, and not destruction of life, that gave him the victory. The horses of the Turks died and their cavalry were dismounted. Their guns had to be abandoned. Their best officers succumbed to the effects of privation. At last the invader of Poland was glad to retire with the remnants of a shattered army to the banks of the Danube. Yet the Turk is the

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most frugal of soldiers, and, as I have said, soldiers were less liberally treated in those days than they are now.

A lack of supplies in a devastated country forced Massena to retire from the lines of Torres Vedras. Most salient example of all, it was an inhospitable country and a rigorous climate that destroyed Napoleon's hosts in 1812.

Valuable as the resources of a country may be, to live on them an army must move forward and a war be carried out without lull or respite. When armies pause in their stride the country close to them is quickly exhausted, and they must fall back on magazines or dépôts of provisions prepared in rear of the columns. Even in so rich a country as France, the Germans, in 1870, found that only one-third of their supplies could be gathered by requisition from the territories they traversed. It is significant that even as far back as those days three million pounds of preserved provisions were ordered from England at the beginning of hostilities.

Forage, perhaps, is the greatest difficulty of all, because, in the first place, it is bulky, and secondly, the animals that draw supplies have to be fed; therefore, the larger the supply train the larger the call upon it. The greater the provision the more inexorable the demand. We become forced to look to the country wherein we are to operate for a large proportion of forage. We must, therefore, be closely acquainted with its productiveness and with the various descriptions of food-stuffs which it grows. We must not be satisfied with

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information derived from one year only, but we must compare the records of several years, and must be prepared to meet bad harvests, if such vicissitudes are probable. We must also know what the chief pursuits of the inhabitants are, whether agricultural or commercial, whether they live by tillage of the soil or by grazing animals.

Such are some of the considerations that the mention of resources raises in our minds, but to British officers there are others besides. The sea is our strongest ally. Our base of supply is the whole world. Hay from Russia, oats from Canada, meat from Australia, coffee and tea from our Indian Empire, mules from Spain, and horses from Argentina—all are borne across the sea, as long as we retain command of it, to preserve the fighting energy of our men and the mobility of our armies. British officers, therefore, not only should be acquainted with the resources of countries in which it is possible, or perhaps probable, that operations may take place, but they ought to be familiar with the products of every region of the globe, so that in time of stress we may supply our bases, not from England only, but direct from any distant country which will give us what we want.

Our contracts would then be carried out at a cheaper rate than if we had to make them at home, and the supply to our troops in the field would be more rapid than in the case of a country which must supply her armies from her own resources. While, therefore, I may have uttered a platitude when I said that the resources of a country in which operations are likely to take place must

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be studied, I utter none when I point out that the resources of all countries should be familiar to British officers, and that an extensive knowledge of an important branch of geography is absolutely essential to those staff-officers whose duties may some day call them to arrange for a supply by sea of such commodities as an army needs.

As regards other characteristics Europe, thanks to the works of foreign geographers, is now probably fairly accurately known. Dr. Miller Maguire in this country (to whom I am indebted for many hints) has written ably on military geography too. Thanks to the industry of such men, the main features of those countries in which they have been interested are accurately known. It is not probable that mistakes which were made a hundred years ago, when the Black Forest was regarded as terrible and impenetrable as the haunted forests of the old romancists, will be repeated. It is as little likely that a Napoleon will again regard Bohemia as a region of mountains as that some unborn Shakespeare will make a drama hinge on adventures near its sea coast.[1] But officers who have not had opportunities of travelling may scarcely even now appreciate how greatly customs in various European countries vary from one another and from our own. Oxen, and even cows, are still to be seen drawing the plough in certain places within easy reach of England. Waggons primitive in construction, and but little different from the "buck waggons" of South Africa, are

[1] *The Winter's Tale.*

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still to be found. The progress of civilisation has been accompanied by disadvantages amongst certain races in certain countries—as, for example, amongst the Mussulmans of Bosnia-Herzegovina, who have become greatly addicted to strong drink—rather than by the benefit to the inhabitants which we might expect. The variations of climate, and their effects, too, will always offer an immense field for research. Some of our squadrons may again be lost by the sudden rising of a river—as occurred at the Kabul River to the 10th Hussars during the Afghan War of 1880—or a British force may be placed in jeopardy in a similar manner, just as, during the Peninsular War, Soult's divisions, marching to the relief of St. Sebastian, found themselves in difficulties when heavy rain rendered impassable the fords of the Bidassoa behind them.

And all foreign territories in which we may have to operate have not been so closely studied as Europe.

SOUTH AFRICAN EXPERIENCES

We can most of us remember incidents in South Africa when rivers which were found to be absolutely dry on one day formed a few days later raging and impassable torrents. We can call to mind dongas where our enemies took shelter, to be swept away by the sudden flooding of a thunderstorm. We shall not forget springs and ponds that were looked for in vain at the end of a day's march; we shall recollect fords sought to no purpose by the attacking column which was to use them, and the useless labour of our opponents at Ladysmith in

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trying to make an artificial flood against the dictates of the natural features of the ground.

Perhaps I have said enough to show that a thorough knowledge of the country in which he is going to operate is a considerable recommendation in a general; and where other qualifications are equal, it may well prove a decisive one when choice has to be made. To know the military geography of the country in which you happen to be situated, and where, in the case of troops abroad, at any rate, you may at any moment have to fight, should be the aspiration of every officer. I think the monotony of service during peace-time might well be tempered by exercises which would embrace the study of the country in the neighbourhood, and such tasks would attract the interest, and foster the powers of observation, of those told off to undertake them far more than work possibly as scientific, but certainly more abstract in character.

STUDY OF NEIGHBOURING DISTRICTS BY OFFICERS IN PEACE-TIME

It does not reflect credit on us as an army that even where our forces have been stationed for years and years the military characteristics of the country in the neighbourhood are often very little understood. Had it been otherwise, no doubt we should have been less at a loss than we often were during the late war, even when operating in our own territories, and in this connection officers commanding our units might take a hint from the

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example of Count Häselar, the late commander of the army corps in Metz, who, in view of eventualities, studied the ground in the vicinity of that fortress with an assiduity exemplified by the fact that his study was papered with maps of the surrounding district.

This last example leads us naturally to that branch of geography which deals with frontiers.

ARTIFICIAL AND NATURAL FRONTIERS

Frontiers are, in fact, a salient example of the value of a thorough knowledge of military geography on the part of those who direct imperial strategy. Artificial frontiers can never equal those dictated by nature as revealed by geography, although the spread or ambitions or necessities of particular races and accidental circumstances have in many cases fixed the boundaries of states, and have set nature at defiance. A very interesting illustration is to be found in the peculiar manner in which the Russian frontier is pushed northwards into the Finmarken, leaving a little spit of Russian territory in the country of her neighbour. The causes of such eccentricities must be read in history, or may be left to speculation; it is enough to say here that symmetry has not invariably been studied where boundaries have been drawn. Nature herself has not, however, always been able to give security with frontiers. Mountains are but a feebler barrier. The Pyrenees have often been passed. We know that the huge tumbled mass of mountains on the north-west frontier of India guarantees no absolute

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security to us. During the late war in the Far East we have seen vast armies traversing mountains and rivers that seemed a little while ago to constitute impassable obstacles. In truth, to set a formal limit to enterprise and military ardour is a hopeless task. We can no more find security in the possession of so-called "keys" or behind natural features than we can behind continuous fortifications such as the Great Wall of China. That was in the mind of Lord Beaconsfield when, in the House of Lords, he made his famous paradox, and said, "The key of India is in London!" Whatever might be the exact boundary which scientific men should trace thousands of miles away, the sway of empire, while London was London, would be ours. While London retained its pre-eminence, while London stood for the energy and courage of the race, and represented the wealth and resources of the British Empire, no reverse on a frontier far away would shake England from her determination to hold her own.

But, while deprecating any pedantic reliance on natural advantages, it must surely occur to us that a better understanding of geography on the part of statesmen and leaders of public opinion would often have prevented some hideous misconceptions and strategical blunders.

How many great national complications, how many possible causes of war, have not arisen from ignorance of military geography on the part of those who drew or assisted to draw the frontier line? We all remember the dispute with the United States, recently happily settled, though not

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completely so to the satisfaction of Canada, as to the frontier line between British Columbia and the territory of the United States in Alaska, and the carelessness as to terms of geographical definition which brought about the long wrangle. This was a legacy of the Russo-English Treaty of 1825. We can most of us recall the tension that existed when what is known as the Penjdeh crisis was upon us in 1885. The disputes which circled round the question of a scientific frontier for India in the days of Lord Beaconsfield are not yet forgotten.

FRONTIER OF NATAL

I would draw attention to the frontier of Natal as it existed before the South African War. When that war was imminent I remember that some of our greatest statesmen and many of our most confident advisers in the Press told us to hold Lang's Nek. They drew their conclusions from the map. Following to the south-east of that pass there was to be seen the Buffalo River, duly coloured blue. To the west the range of the Drakensberg appeared to forbid incursions from the Orange Free State. At certain seasons of the year the Buffalo is a formidable barrier—at others it is as dry as Piccadilly on a summer's day. Many of us have walked across it without wetting our feet. Therefore it offered no obstruction to the passage of the Boers. The Drakensberg is a formidable mountain range, but it is intersected by many passes other than shown upon the map. Wherever a man can set his foot, we have the

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authority of Napoleon and of Frederick for asserting that an army may move. The Drakensberg was therefore no greater obstacle than the Buffalo. The line of communications of a force at Lang's Nek might be cut from either east or west. A stronghold there could be isolated and could exert no strategic influence on the campaign unless its garrison were of such abnormal proportions and resources as to possess the size and radius of action of a field army. Again, why, it was sometimes asked, did not the column marching to the relief of Ladysmith move away from the railway and advance to the east of it on Bulwana? On paper such a move was no doubt possible; in practice, the absence of good roads and water rendered it so difficult and so hazardous that the route along the railway, in spite of its strategical and tactical disadvantages, was preferred.

Here are a few instances that will stir us all, where interest in, and familiarity with, the geographical conditions of a comparatively small district will have made my remarks appeal specially to British officers. Remember, too, that a British general has often been asked to suddenly assume the *rôle* of diplomatist, and has been called from the field of battle to trace a new frontier line upon a map. A man liable to be placed in a position so responsible must be imbued with a sense of strategical geography from his youth. The lessons which stay with us we learn young. It is too late to try your 'prentice hand in middle age at conferences where issues are determined that may remain potent for good or ill for generations.

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DESERTS

A desert must, of course, largely influence all military operations, and, as frontiers, where obstruction or passive defence alone are in view, offer the greatest advantages of any. Sir Charles Dilke and Mr. Spencer Wilkinson, years ago in their book on *Imperial Defence*, pointed out how a Russian army, moving on India *viâ* Penjdeh, Herat, and Kandahar, would, even should it arrive at Sakkur, still be far from the centres of Indian life. A desert, it is true, with its terrors half annulled by the spread of civilisation, but still an inhospitable region, would then lie between it and regions where an inroad would be seriously felt, and which would yield supplies. The Kalahari desert, again, is a protection to the Transvaal from incursions from Damaraland or Namaqualand. Railways have lessened the difficulties of the Sinai Peninsula since Napoleon studied them, but railways take a long time to push forward, and before an invasion of Egypt from the north can become an imminent danger, railways will have to be carried southwards to the two caravan routes that traverse a region of which we have lately heard so much. Of these routes, that on the west runs by El Arish to El Kantara, on the eastern bank of the Suez Canal; the other from Kelaat-el-Akabah at the head of the Gulf of Akabah through Kalaat-el-Nakhl to Suez. In either case some 150 miles of desert have to be crossed, and the problem of supplying water to his army will trouble the invader. Food, forage, and fuel

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cannot be obtained on the spot, and in truth the factor of supply is so predominant that, until secure bases, fed by railways at El Arish and Akabah, have been established, the operation of invading Egypt by land from the regions on the eastern shores of the Mediterranean will, thanks to geographical conditions, scarcely come within the category of normal operations.

EUROPEAN FRONTIERS

But to turn nearer home. The frontier between France and Germany in 1870, and the manner in which the Palatinate flanked the French positions on the Saar and Moselle, supply an example of the weakness of a frontier. There are also disadvantages and advantages to both Germany and Russia as regards their frontier line. A Russian army might in three or four days' time be at Breslau; but on the other hand, the frontier line of Germany on the north-east is threatening to Russia, whose natural frontier on the west would be the line of the Vistula. As it is, Prussia is astride on both the Vistula and the Niemen, thus checking any advance of Russia towards Breslau and Berlin by threatening the right flank and rear of her advanced line of operations. Austria-Hungary again projects eastward between Roumania and Russian Poland, and a Russian army moving from Bessarabia through Roumania or Servia towards Buda-Pesth or over the Danube into Bulgaria, offers its right flank to a potential enemy. Consider, again, how the Dobrudscha,

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held by Turkey in 1877 and projecting northwards so as to flank the Russian left in their advance across the Danube, exercised a great influence on the strategy of the campaign of that year.

STRATEGIC IMPORTANCE OF SWITZERLAND

But Switzerland, from her geographical situation, offers perhaps the best illustration of strategical influence. She projects from the French frontier so as to make a salient between South Germany, Austria, and Italy. If France were to invade Southern Germany she would find her movements flanked from the bend of the Rhine near Basle to Lake Constance, supposing the Swiss to be in alliance with Germany. In possession of Switzerland, on the other hand, France could threaten the flank and rear of a German force defending the line of the river from Basle northwards, as Moreau and Napoleon were not slow to recognise in 1800.

With the Swiss on the side of the French, a German army advancing by way of Breisach or Strassburg would leave an enemy on the left flank of its communications. Or again, with the Swiss against her, and Northern Italy the goal of France, and Milan or Venice or Verona the objective, the left of a French army would be threatened throughout.

Thus Switzerland, in point of numbers a very minor state, by its geographical situation exercises an enormous influence on European strategy. While its integrity is respected its voice is still a

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powerful one in the council-chamber even of the greatest Powers, and we may be sure that every mile of its river valleys and mountain passes are carefully studied by the General Staffs of all the Powers of the Continent.

MOUNTAINS

The question of Switzerland suggests mountains and their influence on strategy to our consideration. At first sight they appear a formidable obstacle to an invader. The close student of war will, however, place less reliance on them. They are usually regarded as specially favouring a defensive attitude, but to my mind, and I have the Archduke Charles with me here, they offer greater facilities to the attack.

That they do especially favour the offensive-defensive *rôle* which is traditional in our Service is however undeniable. An intimate knowledge of their valleys and their passes and the communications through them will enable an active opponent to issue from them, strike his blow, and then retire again into fastnesses where it is difficult for troops without an intimate knowledge of the ground to follow. As an illustration of what I mean we may call to mind the forays of the Highlanders on the lowlands of Scotland; the incursions of the frontier tribes on our cantonments on the north-west frontier of India; the attacks of the Boers descending from the mountainous regions of South Africa on our lines of communication.

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MOUNTAIN WARFARE

I do not deny that a campaign amongst mountains offers immense difficulties to an attacking force, but I contend that an intimate knowledge of the ground will place advantages in favour of the general who possesses it such as will outweigh them. A range of mountains has to be watched for many miles. There are always several passes through or over it, and if pierced at any point the line of defence has to be abandoned. Marshal Saxe told us long ago that "however rough and impracticable mountains may at first sight appear, passes are nevertheless to be always found on being diligently sought for, and even the knowledge of the inhabitants is often at fault because they use the passes they are accustomed to and do not look for any others."

All of us will endorse these latter remarks. An inhabitant of a district is often a most misleading guide, and it is essential that the features of the theatre of operations should be familiar at first hand to some officers of the staff of the general who wishes to make the most of its natural characteristics.

Where, however, the inhabitants of a mountainous region are united against the invader I would modify what I have said. To conquer the whole population of a country is an almost hopeless task, as the Austrians found in Herzegovina and Bosnia, as we ourselves learnt the other day in South Africa, and as Schamyl proved in the Caucasus between 1834 and 1859. If the war be a national

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one for hearths and homes the occupation of mountain ranges is a tremendous undertaking. Discipline and armament and even numbers cannot assert their full influence. Cavalry are at a disadvantage and fail to act as they should. Artillery cannot, except in the case of light mountain guns, be placed in position. A comparatively small number of active troops turning their knowledge of the region to full account may hold out for years.

But when the population is indifferent, or is at least neutral, the situation becomes vastly altered, as the successful passage of many a forbidding mountain range by an army proves.

We have so often to fight on mountains that the geographical features of mountains in relation to war should have a special fascination for us, and both from our own experience in invasions such as in Abyssinia and the north-west frontier of India, and from the lessons of history which lie behind us, we should know how to appreciate their value as defences.

Hannibal crossed the Alps; Francis the First crossed the Alps in 1515 at the Col D'Agnello, some 10,000 feet above the sea, and subsequently fought the battle of Marignano, or Melegnano, as the town from which it takes its names is now called. The so-called impassable Balkans have also been crossed by great armies. We do not want to go beyond our own history to know that the Pyrenees are no insurmountable barrier. Napoleon, as we all remember, wiped the Alps away. In truth, if a mountain chain be an obstacle, it is also

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a screen, and behind it a commander may concentrate his forces unobserved and may effect a passage by outwitting his opponent, just as has been done over and over again in the case of a broad river.

Alexander crossed the Hindu Khoosh from south to north in 17 days. Two years later he passed from north to south in 10 days. The Kabul Valley, the Swat and Buner districts, familiar to us, were all traversed by his men. Timurlane and Baba found no obstacle in the range hundreds of years afterwards. The Suleiman range too has often been penetrated. From A.D. 1001 to 1027 Mahmud of Ghazni led his followers across it on no less than twelve occasions, moving by the Valley of Gomal and the Gwalari Pass to Dera Ismail Khan. The army of Jenghiz Khan crossed by the last-named pass at the beginning of the thirteenth century. The Kabul Valley and the Khyber Pass admitted Baba in 1527, and in 1740 Nadir Shah, striding from Kandahar to Ghazni and Kabul, reached the Indus by the same route. In 1839 and in 1878 our men trod in the footsteps of these old-world raiders, and during the recent Tirah expedition we penetrated into the recesses of one of the most difficult countries in the world, and did so in spite of the disadvantages which a lack of geographical knowledge imposed upon us.

But mountains may exercise an influence on the manœuvres of an army apart altogether from the question of their defensive application, and our own records from the Peninsula will supply us with a good example.

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THE INFLUENCE OF MOUNTAINS ON STRATEGY

The Sierra d'Estrella separates the Valley of the Tagus from that of the Mondego, and the principal roads leading from the Spanish frontier to the capital of Portugal converge along the valley of those rivers.

When Almeida fell it was uncertain by which of the two valleys the French army under Massena would endeavour to reach Lisbon. Both had to be guarded, and the intervening range offered no lateral communications between them. The Duke of Wellington could not concentrate his force in either valley without leaving the other open to his opponent, and therefore that mountain chain was a formidable factor in the strategical situation.

The influence of mountains on strategy is well exemplified in the military history of the war of 1866, and combinations of Moltke and the perplexities of Benedek are standing examples of how they affect military operations.

Where chains of hills or mountains split a country giving long valleys between them, they greatly influence the movements of opposing forces. One can scarcely have a better example than the manner in which the mountains in the Shenandoah Valley biassed the strategy of the valley campaign. The Massanuttons were a real asset to Jackson, who knew the ground, and had the intelligence to weave its natural features in with his design.

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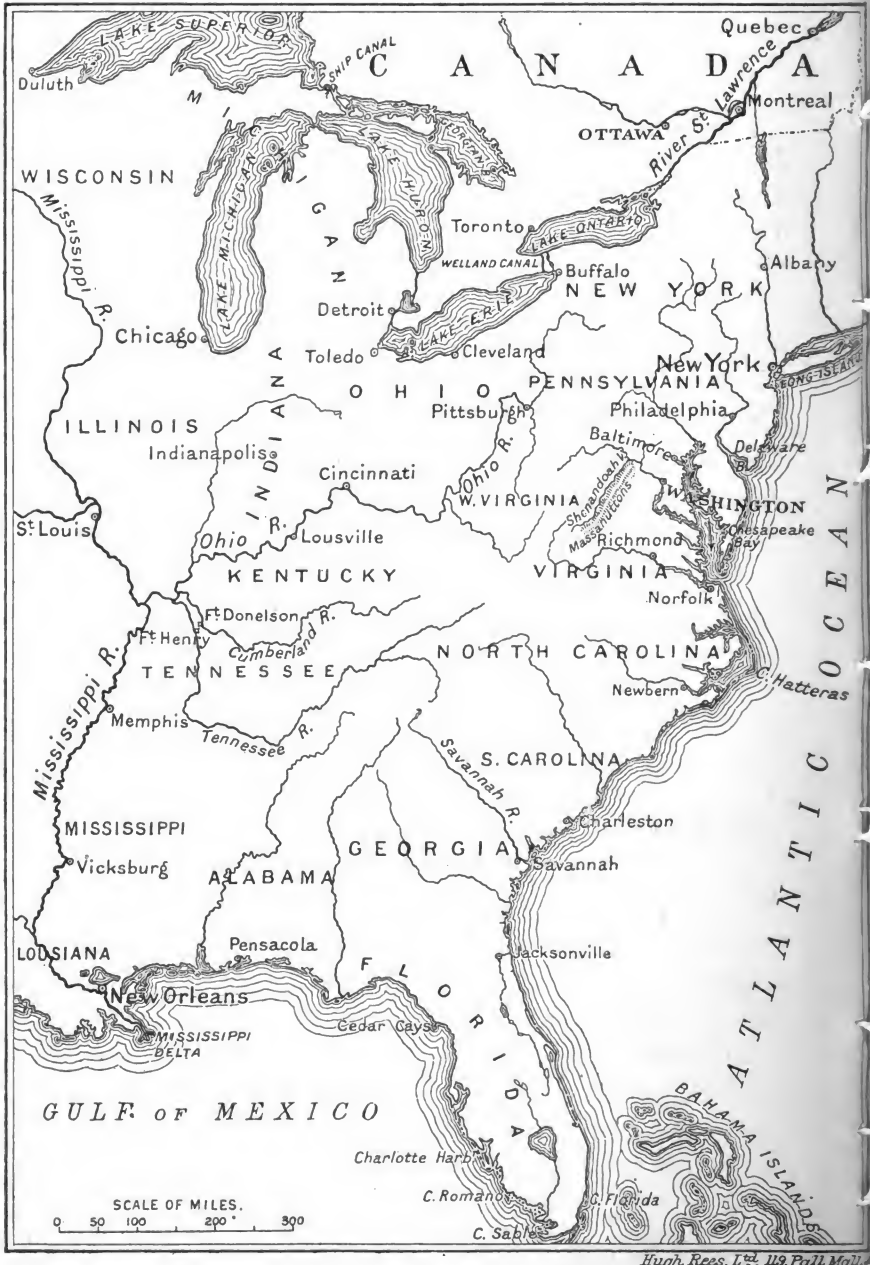
SKETCH MAP OF PART OF NORTH AMERICA.



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VALLEYS

Thus it may be said that the first object of a general studying a country where hills exist should be to gain an intimate knowledge of the trend of the different valleys. He must ponder over the conformation of the region until his mind is, as it were, saturated with it. The little ruts and hillocks will fade away, but a general impression, in which the great strategical framework stands boldly forth, will remain: the main water-sheds, that shape the valleys beneath them and link them one to another; the rivers, whose courses often mark the paths of access.

Roads in the old days followed valleys, and now lines of rail have succeeded roads and often coincide with their course—the same reasons which governed the construction of a road governing that of a railway, though modern science has connected valleys together by tunnelling, and has enabled the railway to penetrate where roads could only climb with difficulty. Here we find old and new linked together, and one more illustration of the permanence of the principles of strategy and the necessity for studying military history. The greatest commanders of modern times have not failed to commend to our notice the study of the campaigns of bygone ages, and of generals long passed away. Nor need we be surprised when we know that the traveller of to-day who starts from Constantinople for Vienna follows a line of Barbarian and Turkish invasion, by Adrianople, Philippopolis, Sofia, to Belgrade and Buda-Pesth,

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and is also on one of the great lines of communication of Imperial Rome. When we travel by Folkestone to Boulogne, and on to Chalons-sur-Saone and Lyons, we are again treading in the footprints of the legions.

VALUES OF STUDY OF HISTORICAL ROUTES

Alexander's career inspired the admiration of Hannibal, who placed him first of leaders, of Napoleon, and finally of Moltke. We shall do well to imitate the example of the great leaders I have named, and note how physical geography exerts its influence on strategy from century to century. The lines of communication which connected Alexander's army with its ultimate base in Greece will be utilised again some day, and once more, we may be sure, some leader of a great enterprise will follow the Euphrates eastward as Alexander and Julian did long years ago. Indeed, seventy years back a modern strategist was at work where the Macedonian had been before, and where the Romans and Assyrians and Persians had once marched and manœuvred. That was in 1837, when the Egyptians were trying to conquer Asia Minor. Moltke, in the employment of the Turks, reached the narrow defile through the Anti-Taurus, which links Asia Minor to Syria, and the strategical importance of the spot appealed to him as hundreds of years before it had appealed to Alexander. They say every great leader must have a touch of imagination and poetry in his composition, and I think there are few more suggestive passages than that which appears in one of Moltke's

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letters[1] to his friend "F——," dated Diarbekir, April 12th, 1837. He describes the ravine below the fortress of Zeugma, or Sigma, where the Euphrates reaches its extreme western point, and where in former days a bridge spanned it—perhaps the reason why the Romans founded a colony in so impassable a neighbourhood. He writes to his friend: "One starlight night a little while ago I stood on the ruins of the old Roman stronghold at Zeugma. Deep below me, in a rocky defile, the Euphrates glistened, the murmur of its waters filling the stillness of the night. Then in the moonlight passed before me Cyrus, Alexander, Xenophon, and Julian. From this very spot they too had once looked across the stream upon the realm of the Chosroes, and the prospect was the same then as now, for nature here wears that stony aspect which changes not." Further, he goes on to tell how as a libation to the shades of the departed he flung a bottle of champagne his friend had given him into the abyss. When I came to that passage I confess that my confidence in the great master was shaken. Had the high priest of closely calculated strategy and logical procedure sacrificed at the shrine of mere sentiment? Had the mathematically minded Moltke lost his head? A few lines more reassured me, and the forethought of the strategist was vindicated in the words, "but I took the precaution to empty it first." He goes on to say that it was an excellent bottle, save for one fault. "It was the last."

[1] Vide *Briefe über Zustände und Begebenheiten in der Turkei*, von Helmuth von Moltke. Mittler und Sohn, Berlin, 1876.

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RIVERS

It is not roads only, however, that follow the course of valleys. A great valley almost invariably implies a river, which is the geographical feature that most frequently affects strategical and tactical designs. Rivers are most usually treated as obstacles to advance not easily overcome. But their influence on strategy is far wider than this. They become strategical frontiers when their principal passages are strongly held. They constitute a natural line of defence in front of a position or on its flank. They may serve to safeguard the flank of an army while in movement. They may dictate the direction of its march, because in certain countries they furnish water to troops where none is elsewhere obtainable, as when the flow of the Nile influenced Lord Wolseley, moving to the relief of Gordon, to follow the trend of the river. We may have a general knowledge of all the chief rivers of Europe, and of many of those in other parts of the world; but such superficial knowledge is inadequate for military purposes. In order to be able to calculate the advantages or otherwise rivers may afford to the movements of opposing armies, we must be familiar with their exact position in relation to the strategical points of the country; we must know the existing bridges and the nature of their construction, the ferries and fords, and the roads which lead to the points of passage. We must study the character of the river itself, whether it is rapid or sluggish, straight or winding; the nature of the bed, of the banks,

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and the relative altitude of that on either side. The battle of the Yalu (April, 1904) and the incidents of the campaign of 1809, when the Lobau in the Danube sheltered the French from destruction, will serve to remind us that the presence of islands or otherwise must not be forgotten. Finally, as I have briefly referred to already, the effect of rain and the seasons of the year on the waterway should be accurately known.

RIVERS AS FRONTIERS

Rivers at first sight would appear the most natural frontiers for states, and indeed it seems as though nature intended them for such, not only for reasons connected with military operations, but to facilitate civil administration.

A river defines a frontier so clearly that there can be no dispute regarding it. It is easy to note the persons who desire to pass it and the nature of the goods they may convey with them. To exercise control over them is the reverse of difficult. Yet it is a remarkable fact that there is not a single state in Europe whose frontier is marked by the course of a large river. The Rhine constitutes no frontier line, no more does the Danube. Even little Switzerland, most compact of states, bulges out curiously into Baden across the Rhine at Schaffhausen. The land frontier of Portugal crosses at right angles the Douro, the Tagus, and the Guadiana. The Rhone, the Elbe, the Oder, the Vistula, the Po—not one of these mark the limitations of a state. Looking further afield, we find

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that the Indus is not the boundary of India, nor does the St. Lawrence delimit our possessions in Northern America.

I have referred to frontiers already, and need say no more about them here beyond drawing attention to this anomaly; besides, I want to pass on to an aspect of rivers which is worthy of particular attention.

RIVERS AS LINES OF OPERATION

When great storms flow parallel, or nearly so, to a line of operations, they form the most convenient high roads for the transport of provisions and the warlike stores which are necessary to the existence of a modern army. The most ceaseless traffic does not impair the efficiency of a river route. That constitutes a road which cannot be obstructed, which cannot be blocked. There is hardly a limit to the capacity of its transport, and for this reason a great river has often supplemented the efforts of sea-power and given it access to the interior, where its force would otherwise have been squandered in the shallows of a coast. Gunboats on the Nile facilitated and assisted our advance on Cairo in 1801. During the American War the Mississippi enabled the ships of the Federals and the armed forces they transported to penetrate into the innermost recesses of their opponents' country. Even more striking from the strategical aspect are the operations conducted by Grant and Admiral Foote up the Tennessee and Cumberland rivers, which are affluents to the Mississippi, in 1862.

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And just as the recent great war in the Far East was coming to a close there was an illustration of the value a great waterway is to a nation in predominance on the sea, which, I hardly think, has been as generally noticed as it should have been. The strategical movement I refer to had for me an interest equal to, or even greater than, that which any other incident of the war had aroused. Nothing to my mind was a more telling illustration of the wide influence of sea-power. It should claim the close attention of us whose chief weapon is maritime force. Just before peace was made, as you will remember, the Japanese, having captured Sakhalin, boldly directed the course of their strategy beyond Castries Bay and the Tumen, far away northwards to the mouth of the Amur. Now, if we examine a map we shall see that that great waterway in its lower course flows due north for some 400 miles from Khabarovsk to Nikolaievsk, and forms the western boundary of the maritime province. A sea-power, therefore, in command both of the river and of the sea coast, could completely isolate and cut off that valuable territory. When Linievitch was entrenching himself and preparing to make a determined stand south of Harbin, it was evident that the Japanese forces threatening Kharbarovsk from the south, acting in combination with an expedition up the Amur, must make him uneasy as to his rear, and must weaken his resolution. The great waterway offered a road of approach of which the Japanese were enabled by naval success to avail themselves. And in fact a naval force did

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appear at Nikolaievsk, created a panic amongst the inhabitants, and an expedition up the river was in progress when the armistice blossomed into peace. Because of the geographical conditions their arm could stretch so far as to reach round the long front of their huge opponent. The maritime province might undoubtedly have been isolated and cut off in the manner described had the struggle continued. Thus the Japanese would have acquired a substantial slice of Russian territory—a tangible trophy which would have become invaluable when terms of peace were under discussion at the end of a more protracted war.

You are aware how difficult it has always been to strike at Russia. Her very bulk is her safeguard; and brilliant as were the Japanese victories, they were fought at such a distance from the centres of Russian life that they were able to wrest no portion of the empire from their opponents except Sakhalin. Had the war been prolonged further, the capture of Vladivostok and the maritime province would have been, as I have said, an enormous asset to Japan, and I cannot doubt that the policy of their Government aimed at such a result. Here, at any rate, we have a concrete example of how a naval and military force combined may accomplish much in a region where a purely military force could not even attempt anything. We are once more reminded how a great waterway facilitates combined action between armies and ships, and studying potentialities such as these you will understand how in the Amur I came to recognise another Mississippi and another Nile.

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SKETCH MAP OF

MANCHURIA

AND PARTS OF ADJOINING COUNTRIES.

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There are other great rivers in the Far East, and, borne on their deep waters, warships can travel hundreds of miles inland. There are mighty rivers, too, in European Russia, which, as avenues of approach or channels of supply to armies, whether in defence or in attack, may possibly play a great part in the world's history.

RIVERS AS AN ASSISTANCE TO DEFENCE

I have quoted great rivers coinciding with a line of advance as enormously aiding sea-power, and therefore of the highest importance to us. I have also stated how a waterway will supplement a line of communications; but I must remind you that there is another side to the medal, and that a waterway has often been recognised as a powerful factor in the defence of a country.

Where a river is parallel to the line of advance of an enemy, fortresses protecting its main passages become strategical points of the highest importance, and develop the resisting power of the country to a vast degree. Such fortresses are strengthened by their situation and the difficulty it imposes on their investment. They flank the line of the enemy's advance and compel him either to stop and seize them, or weaken his army by detachments left to mask them. Vicksburg is here an example to us. We may also quote the experiences of Napoleon in 1809, when Ulm, Ratisbon, and Passau, Linz and Krems, all strong places on the Danube, attracted each a detachment from his main army. Thus his fighting strength was eaten into, and at Aspern and Essling he was no longer

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strong enough to crush the Archduke Charles, and had to retire into an island on the Danube to gather reinforcements for a fresh effort.

JUNCTIONS OF RIVERS AS SITES FOR FORTRESSES

Where great waters meet is often an admirable site for a fortress. Metz, situated where the Seille and Moselle unite, is a familiar illustration of this kind of stronghold, but there are many others not very far away. Coblenz, for example, and Ehrenbreitstein, where Moselle and Rhine and Lahn mingle together; Lyons, where the Rhone and Saone unite, and other places that will readily occur to you. In fact, it may be stated that the confluence of rivers with one another or with the sea have marked the sites of the most celebrated fortresses. Such points of junction form what are known as strategical points; but a strategical point may be created by other considerations of equal importance, such as the presence of a fortress on a river or an estuary. Such centres of gravity are found everywhere in a theatre of war where a locality exists the possession of which by either belligerent must mould or modify the course of operations.

STRATEGIC POINTS

The passages of great rivers are certainly important strategical points. So, too, are mountain passes, or great railway centres, or capitals of countries, or natural features which may be said to guard approaches or supply issues for advance. Forests and road junctions may similarly be

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strategical points, but the value of all localities will vary with the character of the opponent and the nature of the country. Thus, in savage or semi-civilised warfare, grazing tracts where cattle are accumulated may become strategical points. Water supply in foreign regions is often a factor in creating a point of high strategical value. Even a region invested with a supernatural character, by the presence in it of revered burying places or sacred temples, may become elevated to the status of a strategical centre.

CAPITALS

Capitals, being products of civilisation, vary enormously in importance. Paris may be said to be the brain of France. Deprived of her brain the country could not survive. London may be termed the heart and equally the vital spot of England; as much, perhaps, may be said of Berlin, but such terms would not be appropriate to Pretoria or to Washington or to Ottawa, although Montreal would mean much to Canada. Montreal is, indeed, a place of special interest to those who study the bearings of geography on strategy. It is, to begin with, situated on a mighty river, the St. Lawrence, which is here crossed by the celebrated Victoria Bridge, a structure two miles long and an engineering achievement of the first importance. The river forms the link of an important ocean traffic with the system of Canadian canals which leads into the great lakes placed in the very centre of the country. It must, therefore, by its situation, always be a point of immense commercial

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importance; but the neighbourhood which embraces the lakes and rivers has acquired an additional value from the existence of the great railways which man has added to the features of nature. As long as Great Britain retains command of the sea and can preserve inviolate the canals which link them to the St. Lawrence, she can, at any rate, seriously dispute any claim to maritime predominance on the great lakes, and an American invasion of Canada will lose much of its terrors for her.

Enterprises against the long line of the Canadian Pacific Railway could but assume the character of raids while the important strategic points I have named, created by physical geography and improved by scientific effort, remained in British hands.

Quebec, however, may be quoted as a strategic point of even greater importance than Montreal, because it guards the watergate of Canada, controls the St. Lawrence, and forbids the navigation of the river to all but those whom it chooses to admit. Here, again, we have a striking example of the influence of a river on strategy and the strategical necessities which tend to create strong places on the banks of great waterways.

EXAGGERATED TERMS OFTEN USED IN STRATEGICAL DISCUSSIONS

I ought, however, to add that though I have used the word "guard," and hinted at "domination" and "control" in connection with this celebrated fortress, I would recommend that such terms be employed with careful discrimination

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when strategical geography is being discussed. Writers on military subjects are prone to indulge in violent metaphors and to speak in exaggerated terms. Squadrons are hurled on the foe, opponents are overwhelmed, battalions are crushed, or are rent and reel before the blast of musketry, armies are driven headlong into the sea, men are trampled under-foot, and blood often flows like water. Perhaps infected by the contagion of such language, writers sometimes express themselves equally picturesquely, but very inaccurately and thoughtlessly, when they speak of places which art or nature has strengthened exerting an influence which is not inherent in their geographical situation. The possession of a mere locality, however menacing in appearance or naturally attractive for defence, does not imply domination or command.

When people talk of the Rock of Gibraltar commanding the Straits below, it is very often apparent that they imagine that guns placed on that commanding position could destroy any vessel passing beneath. If the importance of Gibraltar rested only on the development of such powers, it could have been but of little importance during much the greater part of the last two hundred years, when the effective range of cannon was usually not more than a mile. Gibraltar is important and commands the approach to the Mediterranean because it supplies a dock and a place of refuge, and what is known as a *point d'appui* for sea-going fleets. No nation weak at sea, even if it were allowed to possess it, would dominate anything from Gibraltar but the belt of water

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under the range of its cannon. Never forget that by taking up a passive attitude of defence you dominate nothing except the glacis of your stronghold. No natural fortress, however strong, is usually worth anything except as a springboard from which an active force may leap.

What I say is applicable not only by sea, but by land. I do not want a better illustration of my meaning than when I assert that the capture of Majuba Hill by Sir George Colley could have exerted no influence on the course of his operations against the Boers, because he could get no artillery on the top of that mountain with which to drive his opponents from their laager and the defence of Lang's Nek, while the place itself offered him no facilities for an advance against the enemy.

A great commander, when he makes an effort to seize a spot, hopes to utilise it but as a stepping-stone to another. From one vantage point to another a series of strides land him finally where he can command decisive success.

Both on sea and land it would often save leaders from a fatal error of "doing something" if they said to themselves before they drew the plan of operations to acquire a particular spot, "How can the enemy neutralise its loss? What shall I do with it when I have obtained it? What shall my next step be? The fame and moral effect of my achievement may do something morally if any revered traditions are at stake; but, putting sentiment on one side, what use will it be in a military sense?" If such questions cannot be answered satisfactorily you may be very sure that the place

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in question does not count for much, and is rarely worth acquiring for itself alone.

I have but sketched the chief geographical features which govern the operations of war, and should therefore provide officers with subjects for close study, and I have barely mentioned that one to us most important of all—the sea. I will, therefore, now turn to some consideration of that elemental factor in success or failure when what may be termed "world-struggles" occupy our thoughts.

THE INFLUENCE OF THE SEA ON GREAT OPERATIONS

No nation can any longer emerge to the highest political eminence, can hope to speak with authority in the world's council-chamber, without a potential claim to mastery on the waves. The struggle between Rome and Carthage turned on sea-power. The foundation of the rule of the Cæsars was built by a battle won on the seas. The giant growth of the Turk was arrested when the command of the Eastern Mediterranean was snatched from him. Spain, at the zenith of her power, was free of the road to the West Indies and Southern America. Now we see the greatest military power in the world endeavouring to duplicate strength on the waters with military predominance ashore. Whether this effort will be a successful one or not will depend in a large degree on geographical conditions. The development of sea-power hinges on physical geography, though there are other factors in its production on which I cannot touch here.

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DEVELOPMENT OF SEA-POWER INFLUENCED BY GEOGRAPHY

For, as certain countries produce particularly beautiful and staunch breeds of horses because some natural characteristic of their soil or climate develops the growth of that animal, or others yield magnificent sheep or oxen for similar reasons, so sea-power, if not always the offspring of nature, can never reach full development without an inheritance from the great mother herself. Examine the natural features of European countries, and consider how their configuration has aided the growth of sea-power or otherwise. England is favoured by geography because her coal and iron are to be found near her coasts, and the materials for shipbuilding are therefore ready to hand. Great Britain and Ireland, sited as they are, obviously flank the great trade routes bearing millions of tons of valuable commerce up the Channel to the Baltic and the North Sea. But she has other natural advantages too. England's greatest natural ports are situated on her southern coast-line, and therefore their position peculiarly favours the issue forth and safety in harbour of fleets, whether of merchant vessels or men-of-war. Hydrographic conditions force deep-draught ships to pass close in front of our ports. A large proportion of the commerce of the world, measured by the value of ships and the commodities they carry, must run the gauntlet of our strongholds, especially in the English Channel. The protection of our own maritime trade and an onslaught on that of an opponent is, therefore, rendered

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easier for us than in the case of other nations, and we are indebted to geographical conditions for our advantage. On the other side of the Channel, that country which was long our stoutest enemy, and is now our cordial friend, while she may rival us as to position, is not so favourably endowed by nature as regards facilities for refuge, or obstruction, or for aggression. Again, though France has been given a seaboard extending from the Mediterranean to the Channel, and possesses a great base at Toulon, her advantage on the Mediterranean has been counteracted by the interposition of Spain between two portions of her coast; while we, for long her most formidable opponent, have seized the most important strategical point in the intervening peninsula. Here the length of the French coast-line and the other natural advantages which nature bestowed upon her were marred in a manner which thwarted her efforts to create a strong sea-power, although this was only one of several causes responsible for the result.

Spain, too, has a great coast-line, and Spain was once a great sea-power which has now fallen from its high estate. The presence of an English stronghold in the centre of her coast-line has been a formidable obstruction to her progress. There are other reasons, which I need not here discuss; but I draw attention to this one because it is connected with geography, and is certainly not to be overlooked.

Germany, in some respects, has been favoured by geography in her maritime development. Many navigable rivers flow into the North Sea, great

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waterways attract and facilitate commercial dealing, and commerce is the mother of sea-power. But coal and iron are not, in her case, placed in the favourable positions where they exist in our country, and the fairy godmother has been less kind to her than to us.

"In Germany, coal and iron are not found close to the sea coast, but have been placed by nature far away inland in the middle and south of the country. The most important shipbuilding towns of this country are situated hundreds of miles from the principal coal and iron centres; in fact, the average distance which the heavy German raw material has to travel overland before being worked into ships is approximately 400 miles, a distance greater than that which separates London from Glasgow. How great are Germany's difficulties owing to her unfavourable geographical position may be seen from the fact that when, in the year 1878, a Government investigation was made into the German iron industry, it was found that from 20 per cent. to 30 per cent. of the cost of production of German iron was accounted for by the cost of transport over long distances, whilst the cost of transport in respect of English iron was said to amount only from 8 per cent. to 10 per cent. of the cost."[1]

And Germany is hampered, too, by the climatic conditions of the Baltic and by the character of its coast. Denmark, too, divides her sea-board, and the mouth of the Elbe was widely separated from Kiel. Therefore she has called in art to rectify nature,

[1] *Contemporary Review*, No. 483, p. 325.

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and dug the great ship canal which neutralises Denmark and links Germany's great arsenal at Kiel with the mouth of the waterway I have just named.

The Dortmund-Ems Canal is another example of an effort to remove the disadvantages imposed on the country by geography. As has been said, the difficulty is caused by the fact that the principal raw materials used in shipbuilding, such as coal and iron ore in Germany situated far away from the sea and that the iron used in ships has to travel by rail over hundreds of miles before it reaches the shipbuilding yards. To obviate these great disadvantages the Dortmund-Ems Canal was constructed some few years ago at a cost of no less than four millions, and by this means the transportation of iron and steel to be used in shipbuilding from the interior of Westphalia to the ship yards on the North Sea and on the Baltic was materially cheapened. Similar considerations urge Germany to undertake the canalisation of the Moselle and to make it a navigable river from Metz to Coblentz which ships of 600 tons may traverse. The ironworks of Lorraine are close to the Moselle, and the transit of minerals from the metalliferous regions of that province to the Rhine would be immensely cheapened by the suggested waterway. It is proposed, too, to canalise the Saar as a further extension of this scheme.

SHIP CANALS

Russia, with a long seaboard, has been hampered by nature in so far that her Baltic ports become

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closed by frost during many months of the year. She is at a disadvantage, too, because her great waterways flow either into frozen seas, into huge inland lakes, or into waters from which the outlet is held by a foreign power, and therefore constitutes a *mare clausum*. Thus, the Baltic, the Caspian, and the Black Sea have all been obstacles to the progress of Russian sea-power, and he has accordingly projected the construction of a canal from Riga on the Baltic to Kherson on the Black Sea.[1] France, too, recognising the defects of her coast line, is considering the construction of a maritime canal through the south of France from Bordeaux to Cette on the Gulf of Lyons. We, of course, do not forget the greatest examples of these navigable canals in that already completed at Suez, and that under course of construction which will link the Pacific and the Atlantic Oceans through the Isthmus of Panama.

INFLUENCE OF INVENTIONS ON SITES OF HARBOURS

The statesman and the soldier who would understand the effect which the construction of these

[1] The following appeared in the *Morning Post* of February 22nd, 1906: "The Imperial Commission, presided over by General Ivanovsky, to report upon the question of a waterway between the Baltic and the Black Sea, has just decided in favour of the scheme, and the Emperor has approved the report and signed an instruction to begin the work at the earliest possible moment in order to give employment to the suffering peasantry in the region traversed. The Government will raise 290,000,000 roubles for the portion of the work involving the construction of a canal between the rivers Dnieper and Dvina. The engineering scheme that has been approved is American, and the enterprise is backed by foreign capital."

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great canals must have on the course of the history of the world must study how in past times physical features have influenced operations. These gigantic efforts of man, when completed, will rival the handiwork of nature herself, and the physical geography of the world will become shaped by the science of the engineer. One striking example of how inventive science has modified the influence of geography is shown in the difference of considerations which now prescribe the choice of site for a commercial harbour. Formerly, the centres of commercial activity lay as far inland as possible up an estuary or arm of the sea. This was so, because, in the first place, roads were bad, and the more use that could be made of water transport the better. Not only that, but the store-houses of great merchants were more safely situated at the end of a long avenue of approach, where the robbers of the ocean might only penetrate with difficulty. Accordingly we find Venice ensconcing herself at the head of the Adriatic, Constantinople protected by the narrows of the Bosphorus and the Dardanelles; London, Antwerp, and Calcutta planted on great estuaries.

Now, however, that railways have largely superseded canals as a means of transport inland, it is important to continue the iron road as far as possible. Accordingly, in modern times, the ports of departure for sea-borne traffic, in place of lying at the head of inlets, are often placed at the end of promontories and peninsulas. Brindisi, for example, has supplanted Venice; and Milford Haven, to come nearer home, has become a com-

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petitor with Bristol. From Fishguard to Rosslare, a new route to Ireland has lately been established. Fishguard will become the first port of call from America, and the mails from New York will reach London six hours earlier than at present.

THE SEA AND PHENOMENA CONNECTED WITH IT INFLUENCING OPERATIONS ON SHORE

I have shown how closely geographical features are connected with the growth of sea-power, and therefore with some of the greatest operations of war. But, on a lower plane, I would remind you how much a knowledge of geography will modify operations conducted in the neighbourhood of the sea coast. The advantages or disadvantages of the sea relative to the positions of armies are almost obvious, but are, none the less, occasionally forgotten. The presence of a sea coast parallel to or behind their line of operations has often been perilous to European armies. The risk of being driven back upon the sea has not seldom acted as a kind of nightmare to commanders. "Between the devil and the deep sea" has grown to be a familiar proverb.

Waves constitute an obstacle which is often regarded as impassable. It certainly is a most formidable one, for even with vessels on a coast to facilitate retreat, a re-embarkation is very hazardous if the army be closely pressed. But to an army which can rely on the aid of sea-power, the waves need have no paralysing terrors. On the contrary, they may prove a refuge and a help. Many a

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British army has escaped the clutches of its opponent over the waters. Massena, forcing Wellington back upon Lisbon, forgot sea-power, and imagined he was driving him to his destruction. But the lines of Torres Vedras secured us from immediate calamity, and eventually, had these not been able to hold out, it was the intention of Wellington to re-embark and escape under cover of the fortifications of St. Julian. Nor had the sea any terrors for him when he advanced with it on his left flank, drawing his supplies direct from home by skilfully changing his base as he went along, and utilising sea-power to assist his operations inland. He clung to the coast for supplies, just as Cromwell availed himself of sea-power when he advanced up the east coast in the Scottish campaign of 1650.

A knowledge, then, of ports and harbours where bases of supply may be established is indispensable to the general who draws up a plan for an over-sea expedition, not only at the outset, but to facilitate supply during the progress of the war.

KNOWLEDGE OF TIDES

In tactical operations, too, other phenomena connected with maritime geography may be of help—a knowledge of the tides, for example, is often important. In certain parts of the globe the wind affects their rise and fall. A strong wind blowing from a certain direction may render places accessible, and therefore assailable, which under normal conditions could not be approached. Scipio Africanus

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got possession of New Carthage by applying his knowledge of such a phenomenon at that place. He assaulted the works by which the isthmus on which the city stood was defended, but this was not the spot where he intended his main effort to fall. A spot was known to him where the land breeze at ebb tide so far lowered the water of the lagoon which communicated with the sea, and bathed the foot of the walls of the stronghold on one side, that his men could walk through it. Through those shallow waters he himself led his troops, who, rearing their ladders where the besieged, little dreaming of an escalade in that part, had left the walls undefended, effected an easy entrance and made themselves masters of the place.[1]

Before the battle of Crecy Edward III. escaped from a critical situation by geographical knowledge —tardily gained, however, through the services of a spy. Hemmed in as he had been during the previous operations, and at his wits' end, he learned of a ford eight miles below Abbeville. Thither he marched, and waiting till the ebb tide had lowered the waters, forced the passage, pursued his way northward through the forest of Crecy, reached the position where he faced his foes, and gained one of the most celebrated victories in our history.[2]

The great Turenne,[3] in 1658, gained the celebrated battle of the Dunes, June 14th, against the army of the Spanish Fronde, commanded

[1] *Carthage and the Carthaginians,* by R. Bosworth-Smith (London: Longmans), p. 295.

[2] *Vide* the account in *The History of the British Army,* by the Hon. J. W. Fortescue, vol. i., book 1, chap. iii., p. 33.

[3] *Turenne,* by H. M. Hozier. London: Chapman & Hall, 1885.

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by Don John of Austria and Condé, with whom were the Dukes of York and Gloucester, by availing himself of knowledge of a similar character. The enemy's right under Don John rested on the sea; Turenne made a false attack upon his adversary's centre to gain time till the tide should run out, and leave an interval between the Spanish right and the waves. Then by a rapid flank movement on the sands he turned and enveloped the enemy's position and routed his army. Subsequently he proceeded with the siege of Dunkirk, which surrendered to him nine days later. This battle has a special interest for us. The Stuart Princes and their followers fought with the Spaniards. British soldiers sent by Cromwell took part in that turning movement I have just described, which proved the decisive stroke of the day. Cromwell's warships co-operated by bringing their fire to bear on the Spanish right, and thus supported the attack of the army; while finally it was to England that Dunkirk was handed over when it fell.

I have not by any means exhausted the list of occasions on which a particular knowledge of the sea coast has favoured armies, but the last example I have quoted finds its counterpart in an operation also carried out by the allies of this country, present to the minds of us all, and appealing therefore to us with special force. I mean that afforded by the battle of Kinchou the other day (May 26th, 1904) when the Russians were attempting to hold back the Second Japanese Army under Oku from advancing to the siege of Port Arthur. You

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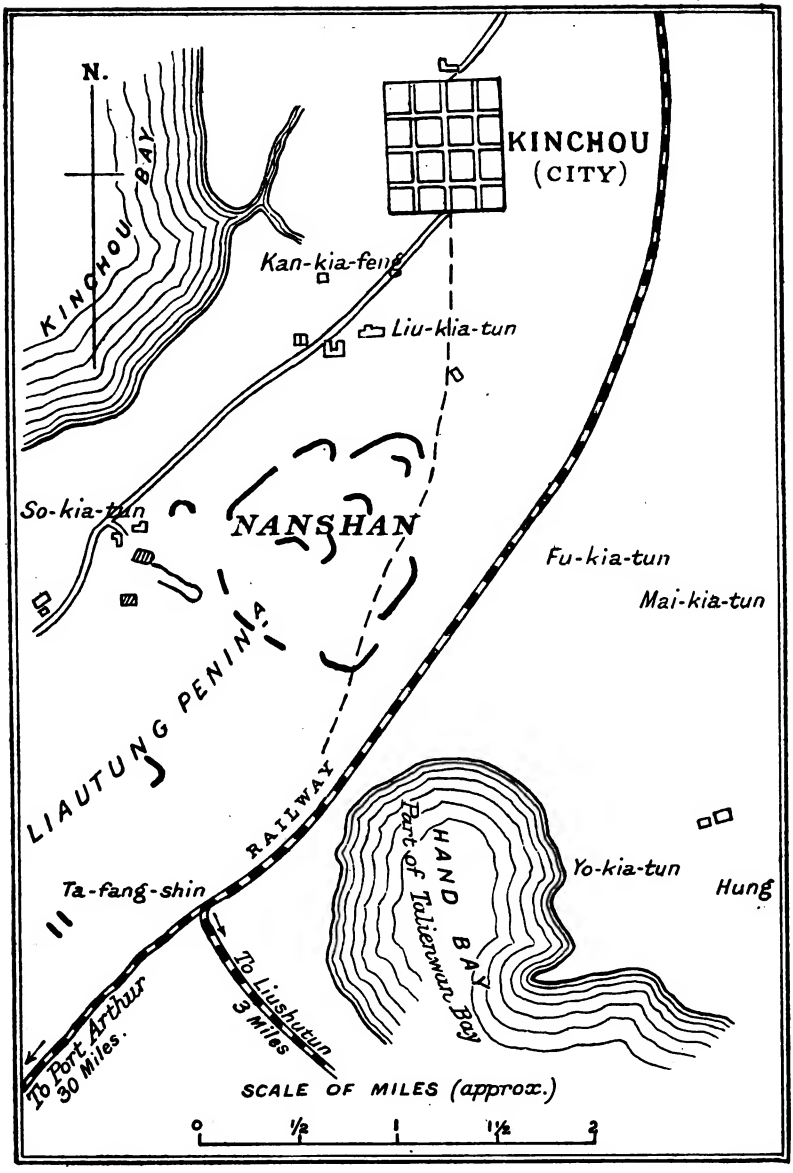

SKETCH MAP

BATTLE OF KINCHOU, May 26th, 1904.

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will remember how the progress of the battle was uncertain, because the Japanese attack, owing to the Russian flanks extending from sea to sea, had to be a frontal one, with the proverbial disadvantages attaching to such an operation; but the Japanese 4th Division on the Russian left, finding the water shallow, waded through it and succeeded in storming the left of the Nanshan position and in gaining the victory. Their efforts were supplemented by the fire of four gunboats. On the other side of the peninsula the resistance of the Russians was strengthened also by the fire from a Russian warship in Talienwan Bay. In one respect this battle affords a unique example for us. It exhibits the army and navy of both combatants co-operating simultaneously on both flanks of a position, and it furnishes us, as I have said, with a salient example of how a knowledge or quick appreciation of local geographical conditions enabled one side to seize an advantage.

CONCLUSION

Has time been wasted in going back more than two thousand years in one instance, and hundreds of years in others, to make good a point? Is there any profit in setting operations carried through with magazine rifles beside others accomplished before gunpowder was invented? What basis of comparison can exist between Scipio and Oku, or even between a Plantagenet king and Turenne? The gulf of time is bridged by human nature. Personality, force of char-

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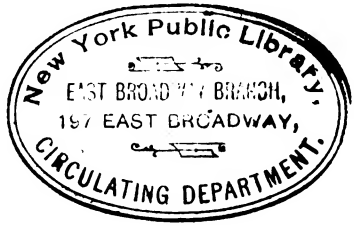
acter, quickness of observation, resourcefulness win battles now, have won them, and will win them, because these qualities make leaders of men. Such leaders gain victories because they possess the sense, natural or acquired, of recognising opportunity, of utilising every kind of knowledge, of bending accidental circumstances to their ends. With some the sense may be latent from birth, and occasion will develop it as a match will set a lamp ablaze. Some see for themselves what others only see when they are told how and where to look. But the less gifted may acquire by practice and study a second-hand experience that will often produce a substitute for the congenital faculty. It is because they stir the imagination that Military History and Geography are so valuable to the soldier, enlarge his horizon, and foster military instinct. We cannot profit by one without a knowledge of the other, and some of the most difficult problems that puzzle generals are in their essence geographical.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